UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/880,714	06/12/2001	Ross Halgren	45433/DBP/C664	5525

23363 7590 04/11/2006

CHRISTIE, PARKER & HALE, LLP
PO BOX 7068
PASADENA, CA 91109-7068

EXAMINER	
LI, SHI K	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 04/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/880,714	HALGREN ET AL.	
	Examiner	Art Unit	
	Shi K. Li	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-8 and 10-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-8 and 10-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 10, 14, 17-19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al. (U.S. Patent 6,335,992 B1) in view of Koh et al. (U.S. Patent 6,829,436 B2) and Marmur (U.S. Patent 6,466,886 B1).

Regarding claims 1, 17 and 19, Bala et al. discloses in FIG. 1B an optical node for a WDM communication network. FIG. 1B comprises a first network interface unit 20 for demultiplexing an incoming WDM optical signal, a second network interface unit 40 for multiplexing channels into an outgoing WDM signal, a secondary interface unit 30 for dropping optical signal locally (see col. 5, lines 12-13) and a crossconnect 10. Bala et al. teaches in FIG. 5A a configuration for the crossconnect using electronic switch fabric. It may not be clear whether Bala et al. supports switching different data-rates or not since Bala et al. uses as example a constant data rate of 2.5 Gb/s in Table 2. Koh et al. teaches optical cross-connect device with transparency. Koh et al. teaches in FIG. 1 prior art WDM system wherein only a single transmission rate is supported and discloses in FIG. 3 a preferred embodiment wherein arbitrary transmission rate is supported. One of ordinary skill in the art would have been motivated to combine the arbitrary transmission rate receiver/transmitter of Koh et al. with the optical node of Bala et al. because it overcomes the limitations of prior art system where only a single

transmission rate is supported, allows transmission format to be changed during operation, and supports deployment of more than one transmission formats concurrently. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use arbitrary transmission optical receiver and arbitrary transmission optical transmitter, as taught by Koh et al., in the optical node of Bala et al. because it overcomes the limitations of prior art system where only a single transmission rate is supported, allows transmission format to be changed during operation, and supports deployment of more than one transmission formats concurrently.

The combination of Bala et al. and Koh et al. still fails to teach a bypass connection for switching between 3R regeneration and 2R regeneration. Marmur teaches a 3R regeneration unit (see col. 1, line 54). Marmur teaches in FIG. 2 and col. 3, line 58-col. 4, line 34 to use a clock rate indication signal to control the CDR for handling different communication protocols. Marmur teaches in FIG. 2 a bypass path 22 for bypassing the CDR to form a 2R regenerator. One of ordinary skill in the art would have been motivated to combine the teaching of Marmur with the optical node of Bala et al. because a 3R regeneration corrects timing in additional to power level and shape, and, therefore, provides high quality signal at the output interface unit. In addition, a bypass path provides 2R regeneration when the clock rate is not recognized (proprietary customer format). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use 3R regeneration, as taught by Marmur, in the optical node of Bala et al. because a 3R regeneration corrects timing in additional to power level and shape, and, therefore, provides high quality signal at the output interface unit, and a bypass path allows 2R regeneration when the clock rate is not recognized (proprietary customer format).

Regarding claim 10, Marmur includes in FIG. 2 a programmable gate array 31 and in col. 3, line 58-col. 4, line 34 to send clock rate indication to CDR for different data-protocols. Therefore, Marmur teaches a programmable clock data recovery circuit.

Regarding claim 14, it is obvious that the switching unit can be incorporated in a circuit pack with either the first network interface unit or the second network interface unit.

Regarding claim 18, Bala et al. teaches in col. 4, lines 37-39 to incorporate the optical node in a network.

Regarding claim 22, Bale et al. teaches in FIG. 5A a configuration for the crossconnect using electronic switch fabric. The configuration of FIG. 5A is capable of switching an incoming optical channel of one wavelength to an outgoing optical channel of another wavelength. Therefore, the same signal is carried on different wavelength between different network nodes.

3. Claims 2-3 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al., Koh et al. and Marmur as applied to claims 1, 10, 14, 17-19 and 22 above, and further in view of Sahasrabuddhe et al. (U.S. Patent Application Pub. 2002/0159114 A1).

Bala et al., Koh et al. and Marmur have been discussed above in regard to claims 1, 10, 14, 17-19 and 22. The difference between Bala et al., Koh et al. and Marmur and the claimed invention is that Bala et al., Koh et al. and Marmur do not teach an add-channel. Sahasrabuddhe et al. teaches in FIG. 3 to include an add-channel for adding local traffic to the network. One of ordinary skill in the art would have been motivated to combine the teaching of Sahasrabuddhe et al. with the modified optical node of Bala et al., Koh et al. and Marmur because network traffic are commonly bi-directional, e.g., Internet browsing and interactive transaction. Thus it would

have been obvious to one of ordinary skill in the art at the time the invention was made to include an add-channel in the modified optical node of Bala et al., Koh et al. and Marmur, as taught by Sahasrabuddhe et al., because network traffic are commonly bi-directional.

Regarding claim 3, Marmur suggests the use of 3R regeneration.

4. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al., Koh et al. and Marmur as applied to claims 1, 10, 14, 17-19 and 22 above, and further in view of Levine et al. (U.S. Patent 6,668,106 B1).

Bala et al., Koh et al. and Marmur have been discussed above in regard to claims 1, 10, 14, 17-19 and 22. The difference between Bala et al., Koh et al. and Marmur and the claimed invention is that Bala et al., Koh et al. and Marmur do not teach a circuit card. Levine et al. teaches in FIG. 10 to arrange interfaces in interface cards. One of ordinary skill in the art would have been motivated to combine the teaching of Levine et al. with the modified optical node of Bala et al., Koh et al. and Marmur because arranging interface in circuit cards allows users to configure system according to capacity demand. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the interfaces in circuit cards, as taught by Levine et al., in the modified optical node of Bala et al., Koh et al. and Marmur because arranging interface in circuit cards allows users to configure system according to capacity demand.

5. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al., Koh et al. and Marmur as applied to claims 1, 10, 14, 17-19 and 22 above, and further in view of Grann (U.S. Patent 6,396,978 B1).

Bala et al., Koh et al. and Marmur have been discussed above in regard to claims 1, 10, 14, 17-19 and 22. The difference between Bala et al., Koh et al. and Marmur and the claimed invention is that Bala et al., Koh et al. and Marmur do not teach a device for use both as a multiplexer and demultiplexer. Grann teaches in FIG. 1 a passive optical device that can be used as a multiplexer or a demultiplexer. The device can be applied for coarse WDM (see col. 2, lines 16-17). One of ordinary skill in the art would have been motivated to combine the teaching of Grann with the modified optical node of Bala et al., Koh et al. and Marmur because the multiplexer/demultiplexer of Grann is compact and cost effective and can reduce noise (for example, see col. 2, lines 38-45). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the multiplexer/demultiplexer of Grann in the modified optical node of Bala et al., Koh et al. and Marmur because the multiplexer/demultiplexer of Grann is compact and cost effective and can reduce noise.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al. and Marmur as applied to claims 1, 10, 14, 17-19 and 22 above, and further in view of Zadikian et al. (U.S. Patent 6,631,134 B1).

Bala et al., Koh et al. and Marmur have been discussed above in regard to claims 1, 10, 14, 17-19 and 22. The difference between Bala et al., Koh et al. and Marmur and the claimed invention is that Bala et al., Koh et al. and Marmur do not teach redundant switching unit. Zadikian et al. teaches in FIG. 3 redundant architecture to increase system reliability for failure protection. One of ordinary skill in the art would have been motivated to combine the teaching of Zadikian et al. with the modified optical node of Bala et al., Koh et al. and Marmur because redundant architecture increases system reliability and protects against failure. Thus it would

have been obvious to one of ordinary skill in the art at the time the invention was made to include redundant switching unit, as taught by Zadikian et al., in the modified optical node of Bala et al., Koh et al. and Marmur because redundant architecture increases system reliability and protects against failure.

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al., Koh et al. and Marmur as applied to claims 1, 10, 14, 17-19 and 22 above, and further in view of Gersbach et al. (U.S. Patent 5,371,766).

Bala et al., Koh et al. and Marmur have been discussed above in regard to claims 1, 10, 14, 17-19 and 22. The difference between Bala et al., Koh et al. and Marmur and the claimed invention is that Bala et al., Koh et al. and Marmur do not teach to implement the regeneration unit as a very large scale integration (VLSI) structure. Gersbach et al. teaches in col. 4, lines 31-38 that regeneration circuit is well suitable for VLSI implementation. One of ordinary skill in the art would have been motivated to combine the teaching of Gersbach et al. with the modified optical node of Bala et al., Koh et al. and Marmur because VLSI implementation reduces size and increases reliability. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the regeneration unit with VLSI structure, as taught by Gersbach et al., in the modified optical node of Bala et al., Koh et al. and Marmur because VLSI implementation reduces size and increases reliability.

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al., Koh et al., Marmur and Grann as applied to claims 11-13 above, and further in view of Sahasrabuddhe et al. (U.S. Patent Application Pub. 2002/0159114 A1).

Bala et al., Koh et al., Marmur and Grann have been discussed above in regard to claims 11-13. The difference between Bala et al., Koh et al., Marmur and Grann and the claimed invention is that Bala et al., Koh et al., Marmur and Grann do not teach an add-channel. Sahasrabuddhe et al. teaches in FIG. 3 to include an add-channel for adding local traffic to the network. One of ordinary skill in the art would have been motivated to combine the teaching of Sahasrabuddhe et al. with the modified optical node of Bala et al., Koh et al., Marmur and Grann because network traffic are commonly bi-directional, e.g., Internet browsing and interactive transaction. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an add-channel in the modified optical node of Bala et al., Koh et al., Marmur and Grann, as taught by Sahasrabuddhe et al., because network traffic are commonly bi-directional.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al., Koh et al. and Marmur as applied to claims 1, 10, 14, 17-19 and 22 above, and further in view of Okano et al. (U.S. Patent 6,449,074 B1).

Bala et al., Koh et al. and Marmur have been discussed above in regard to claims 1, 10, 14, 17-19 and 22. The difference between Bala et al., Koh et al. and Marmur and the claimed invention is that Bala et al., Koh et al. and Marmur do not teaches that the dropped optical signal has a wavelength different from the corresponding optical channel signal received at the network interface. However, it is well known in the art that local facilities use wavelength different from long-haul transmission facilities. For example, Okano et al. teaches in FIG. 1 and col. 4, lines 26-37 to include wavelength converters 24 in transponder 18 for converting wavelengths used for WDM transmission to wavelengths suitable for local optical receiver 20. One of ordinary

skill in the art would have been motivated to combine the teaching of Okano et al. with the modified WDM communication network of Bala et al., Koh et al. and Marmur because local facilities use different wavelengths from long-haul WDM transmission facilities. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use transponder as wavelength converter for converting wavelength used for long-haul WDM transmission to wavelength for local facilities, as taught by Okano et al., in the modified WDM communication network of Bala et al., Koh et al. and Marmur.

Response to Arguments

10. Applicant's arguments with respect to claims 1-3, 5-8 and 10-23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl
6 April 2006

Shi K. Li
Patent Examiner